(No Model.) 2 Sheets—Sheet 1.

F. E. CANDA.

REFRIGERATOR CAR.

No. 522,448. Patented July 3, 1894.

Fig. 1.

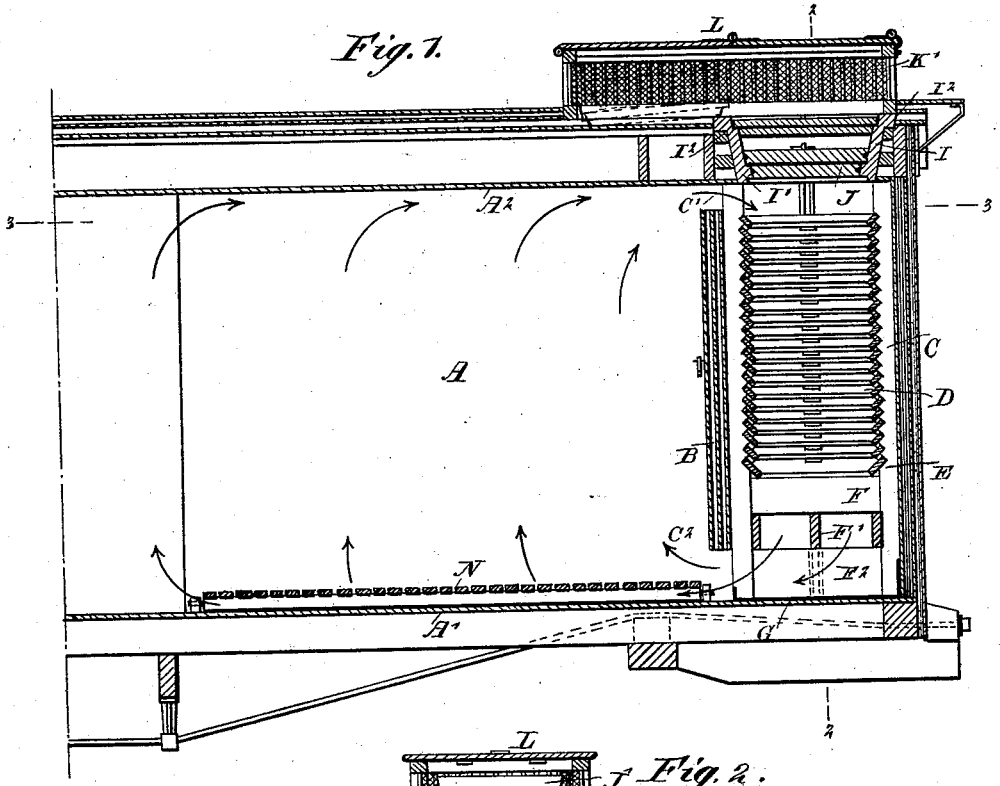
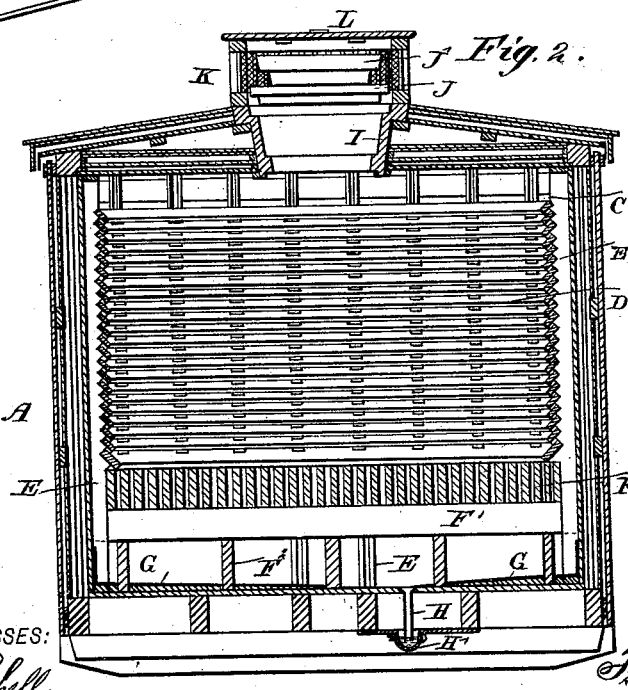


Fig. 2.



WITNESSES:
Donn Twitchell
C. Sedgwick

INVENTOR
F. E. Canda
BY Munn & Co
ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

F. E. CANDA.

REFRIGERATOR CAR.

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Fig. 3.

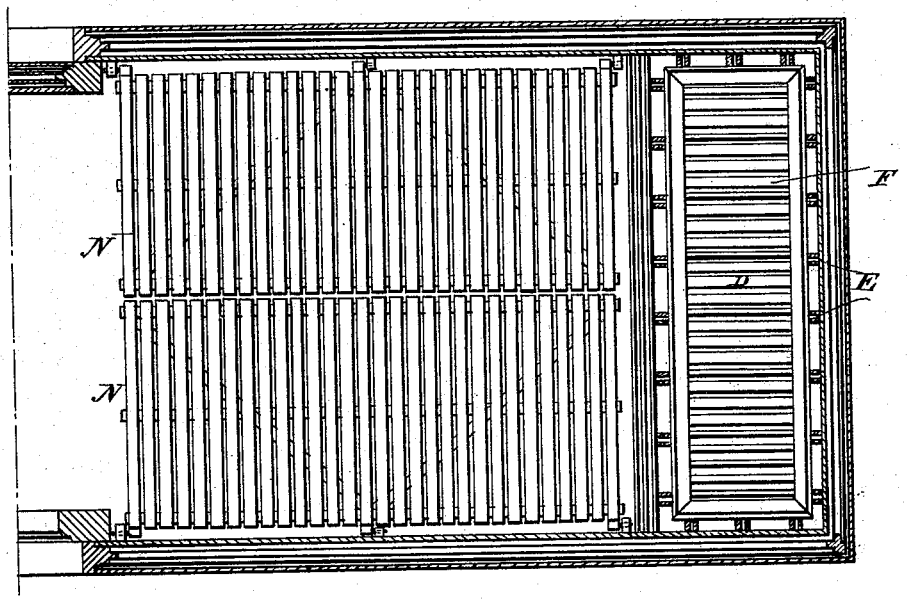
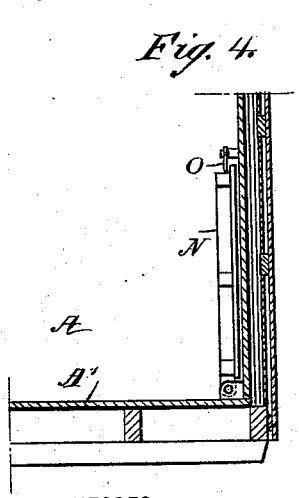
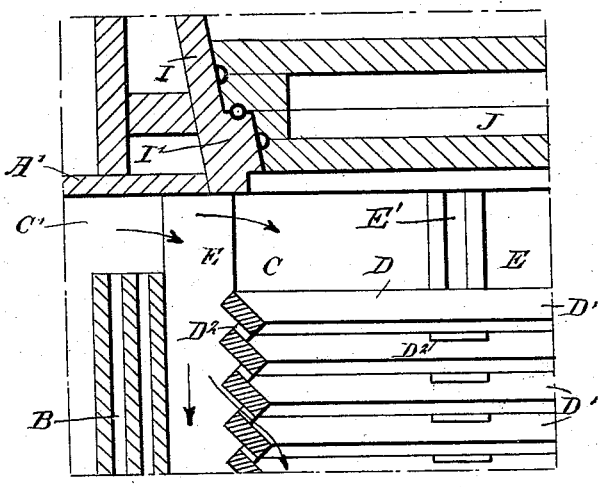


Fig. 5.

Fig. 4.





WITNESSES:

Donn Switchell

G. Sedgwick

INVENTOR

F. E. Canda

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FERDINAND E. CANDA, OF NEW YORK, N. Y.

REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 522,448, dated July 3, 1894.

Application filed January 18, 1893. Serial No. 458,806. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND E. CANDA, of the city, county, and State of New York, have invented a new and Improved Refrigerator-Car, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved refrigerator car in which a low and high temperature may be secured by means of a constant and natural circulation of dry air and which circulation can be maintained with economy in the use of the ice.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a transverse section of the same on the line 2—2 of Fig. 1. Fig. 3 is a sectional plan view of the same on the line 3—3 of Fig. 1. Fig. 4 is a transverse section of the improvement, showing the false bottom swung up out of the way; and Fig. 5 is an enlarged sectional side elevation of part of the improvement.

The improved refrigerator car is provided with a suitable car body A near each end of which is formed a transversely-extending partition B extending at its lower end a suitable distance from the bottom A′ of the car and extending at its upper end a similar distance from the top lining A^2 of the car so as to form an inlet opening C′ for the air, the latter passing from the car body A into the ice bunker C formed between the respective partition B and the corresponding end of the car. The opening C^2 formed on the bottom of the partition B, serves as an outlet for the air from the bottom of the bunker C to the lower part of the car body A.

In the ice bunker C is arranged an ice crate D made of a series of frames D′ located one above the other and placed suitable distances apart so as to form intervening spaces between the sides of two adjacent frames. The sides of the frames are inclined inwardly and downwardly, as plainly shown in the drawings, and the upper outer edges of the sides are fitted into recesses formed in posts arranged in the bunker C and extending between the floor A′ and the top lining A^2, as will be readily understood by reference to the drawings.

In order to separate the individual frames D′ I place between two adjacent frames, a block D^2 on each post E, see detail Fig. 5, so that the air can freely circulate through the intervening space formed between the inclined sides of two adjacent frames. The bottom frame of the ice crate D rests on a grate F, the individual grate bars of which extend longitudinally, as shown in the drawings, the said grate F being supported by transverse bars F′ resting on longitudinal bars F^2 held on the floor A′ of the car body A. The bottom of the bunker C supports a metallic drip pan G inclined from the sides of the car inwardly, as plainly shown in Fig. 2, the lowermost part of the drip pan opening into an outlet pipe H extending downwardly through the floor of the car A′ to connect with the usual water seal H′ which permits the water to flow from the drip pan G through the pipe H to the outside and at the same time prevents all air from passing from the outside of the car through the pipe H to the interior of the car body.

As shown in the drawings, the crate D leaves sufficient space between it and the sides of the bunker C, but furthermore forms separate vertical ducts or channels E′ for the passage of air so that the latter can freely circulate on the outside of the crate as well as through the intervening spaces between the individual frames, as previously explained, so that the circulating air has access to the ice in all directions, as well as through the crate itself, thereby confining the condensation which may take place to the interior of the crate inlet, thus maintaining a dry atmosphere. The circulation of the air is further improved by the fact that the sides of the frames are inclined downwardly and inwardly, so that part of the air passing down through the channels E′ and impinging on the frames will glide down the inclined upper surfaces of the same and thus be conducted to the interior of the crate. It will be understood that this result is due to the provision of the downward side channels E′ and the in-

clined openings or channels arranged between each two adjacent frames D′ and extending downwardly from the channels E′ to the interior of the crate. The paths of travel of the air will be seen best in Fig. 5, by reference to the arrows marked thereon. It will be seen that by this special construction of the bunker and ice crate, I confine the drippings from the ice to the interior of the crate even when sudden stops or lurchings of the car take place, thus also removing any possible danger to the insulation of the car through water coming in contact with the sides or ends of the car.

Directly above the ice crate D I arrange a hatch I extending from the lining A^2 to the top of the car, as plainly shown in the drawings. This hatch I is formed with two seats I′ and I^2 for the doors J and J′ respectively, located one above the other and serving to close the hatch as soon as the crate D is filled with the necessary quantity of ice. The doors J and J′ are insulated in the usual way by flexible packings as indicated in Fig. 5, so as to form air and water-tight joints. Above the top of the hatch I is arranged an open frame K set on the roof of the car and having its sides covered by a suitable screen, as plainly illustrated in the drawings, the lip L of the said frame being made in two hinged sections, so that the front and rear part of the frame can be opened.

The frame, as shown in Fig. 1, is about double the length to that of the hatch I, so that the doors J and J′ can be conveniently stored in the rear part of the frame K during the time the crate D is filled with ice, before the car starts on its trip. This frame K serves to ventilate the interior of the car body A at the time the car is not required for refrigeration. In this case the elevated frame K supports, at its rear end, the doors J and J′, so that the hatch I is opened, and permits circulation of outer air from the car body A. Thus, the frame K serves for ventilating purposes, and also for the storage receptacle for the doors J and J′, so that the latter are not lost or misplaced.

In order to control the air currents and distribute the same throughout the interior of the car body A, I provide the latter with a false bottom or gratings N, each hinged to the respective side of the car and adapted to be swung up into a vertical position, as illustrated in Fig. 4, and locked in place by a suitable locking device O, so that the car can be used for other purposes in case it is not required for refrigeration.

Part of the air passing through the opening C^2 in a cooled condition passes under the false bottom N and is distributed by the latter throughout the car body, see Fig. 1, it being understood that the cooled air finally rises between the bars of the grating to cool the contents of the car. As shown in Fig. 3, each grating extends from one side of the car to about the middle of the same, so that the gratings can be readily swung up into a vertical position to lean against the sides of the car to permit of sweeping the floor A′ or for using the car for other purposes.

It will be seen that by the arrangement described, a low or high temperature is secured by means of a constant and natural circulation of dry air and this temperature is maintained with great economy.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A refrigerator car, provided with a bunker, a crate located in the bunker and spaced from the walls thereof, said crate being provided with a series of openings or channels extending through the walls of the crate and inclined downward from its exterior to its interior, and posts arranged in the space between the bunker walls and the crate and provided with notches to support the crate, the said parts dividing the space between the bunker-walls and the crate into a series of separate ducts which communicate with the said downwardly inclined channels in the crate walls, and thus with the interior of the crate, whereby part of the air traveling downward in the said ducts, exteriorly of the crate, will be deflected inwardly to continue its downward course through the said inclined channels in the crate walls and into the interior of the crate, substantially as described.

2. In a refrigerator car, a hatch arranged in the roof of the car above the ice crate, superposed air-tight doors for closing the said hatch, a screen frame rigidly secured to the top of the car over the said hatch, and a lid made in two sections each hinged to the screen frame at the center thereof, substantially as shown and described.

FERDINAND E. CANDA.

Witnesses:
THEO. G. HOSTER,
EDGAR TATE.